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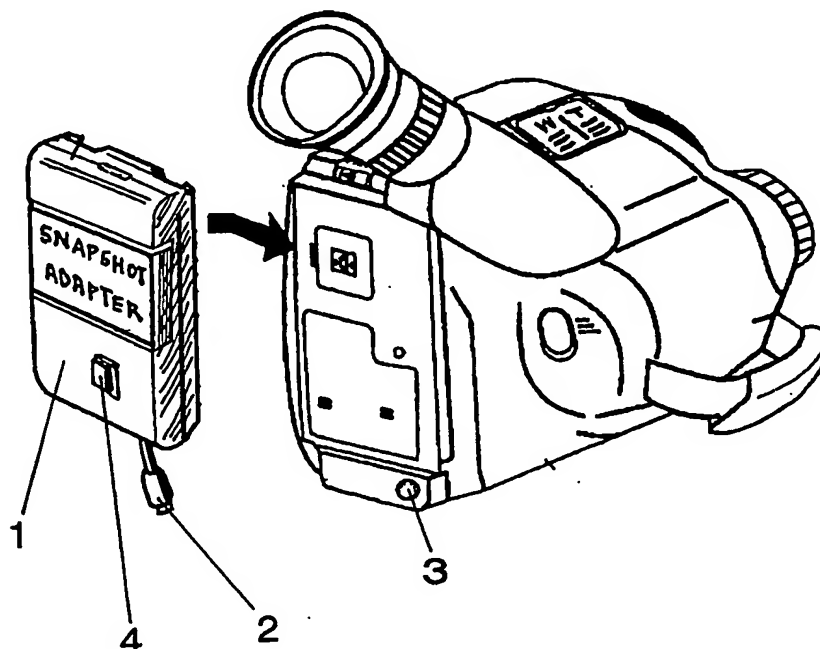
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(21) International Application Number: PCT/IB98/00660 (22) International Filing Date: 2 March 1998 (02.03.98) (71)(72) Applicant and Inventor: ARENA, Luigi [US/US]; 162 Sheridan Avenue, Mt. Vernon, NY 10552 (US).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>With amended claims.</i>

(54) Title: SNAPSHOT ADAPTER FOR VIDEO CAMERAS

(57) Abstract

A device that adds freeze-frame capability to camcorders or video cameras so that they can be used as a digital snapshot camera. The freeze-frame adapter is designed as an add-on module which connects to the battery receptacle of the video camera or camcorder. The snapshot module contains both the freeze-frame electronics and the battery and replaces the battery of the camcorder. The battery provides power to both the camcorder and the photo adapter module. No modifications of the camcorder are required. The video signal used as the source of images for the freeze-frame adapter is derived from the Audio-Video output of the camcorder. The unit is always on and ready for use whenever the camcorder is on. Still images can be acquired simultaneously to video. The viewfinder of the camcorder also operates as the viewfinder in the snap-shot mode. The image is captured by pressing a shutter button on the freeze-frame adapter. Images can be acquired while the camcorder is filming. Both motion and still images can be acquired simultaneously. Captured images can be downloaded into a computer via a standard serial or parallel port or other data transfer link.



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SNAPSHOT ADAPTER FOR VIDEO CAMERAS

Cross References to Related Applications

None. This is the first submission.

Background -- Field of Invention

This invention relates to digital photography and video cameras, specifically to a device which adds freeze-frame capability to the camcorder or video camera to which it is connected thus allowing the use of the camcorder as a digital camera.

Background -- Description of Prior Art

Digital cameras have recently been introduced as a practical and relatively inexpensive way to import images into computers. They generate images by digitizing the output of optoelectronic transducers and temporarily storing the images in on-board memory. The images are downloaded via serial or parallel ports or other data transfer link. The quality of images produced by digital cameras is generally inferior to that of optical scanners which have usually higher resolution and more accurate color rendering. Digital cameras, however, are of more practical use especially because of their portability. The cost of digital cameras ranges from few hundred to several thousand dollars and is in great part determined by the quality of the opto-electronic transducers. The resolution, the image size, the number of colors reproduced varies with the quality of the camera.

A second way to import images into computers is to connect a video camera to a frame grabbing device connected to a computer. The frame grabbing device can be internal or external and utilizes software running on the computer to acquire and store images. These devices are designed to work in conjunction with a computer and are generally not suitable for portable use.

More recently, digital camcorders with freeze frame capability have been introduced. They are a camcorder and a digital camera in a single unit and allow both cine and still images to be acquired. Digital camcorders are usually high-end products and still not widely used because of their cost. They are a good choice for first time buyers who can afford a more expensive camcorder but would hardly justify the cost for most people who already own a camcorder and wish to acquire still images..

In summary, the choices available today to people interested in digital photography today are:

- 1) purchase a digital camera,
- 2) connect a video camera to a frame grabbing device attached to a computer or
- 3) purchase a digital camcorder with freeze frame capability.

The invention described here offers a fourth option which can be less expensive than purchasing a second camcorder or a digital camera and more practical than connecting a video camera to a frame grabbing device.

Objects and Advantages

It is, therefore, an object of the present invention to provide a more economical way to acquire digital images. This is accomplished by eliminating duplication of hardware. The proposed freeze frame adapter utilizes the opto-electronic transducer of the camcorder thus eliminating the most expensive element of the digital chain.

It is also an object of the present invention to provide a more practical way to acquire digital images. The freeze-frame adapter is designed as an add-on unit for camcorders. The unit is always on and ready for use whenever the camcorder is on. Still images can be acquired simultaneously to video. It is not a second device to carry and set up. It has the versatility of digital cameras without the extra cost. The unit does not depend on a computer to operate. It has the portability that is lacking in frame grabbers.

It is another object of the invention to improve the quality of the acquired digital images. The resolution of digital images is determined in great part by the quality of the optoelectronic transducer. Many camcorders have excellent transducers which can be fully utilized to generate digital images rather than purchasing an economical digital camera.

These and other objects and advantages will become apparent from a consideration of the ensuing description and accompanying drawings.

Preferred Embodiment - Description

The embodiment of the invention presented here is construed as an add-on module which connects to the battery receptacle of the camcorder, No modifications of the camcorder or video camera are necessary. The module contains both the electronics and the battery and replaces the battery of the camcorder. The battery provides power to both the camcorder and the photo adapter module. The snap-shot adapter is therefore not larger than the battery of the camcorder which it replaces. In an alternate embodiment the battery can be removable.

A short cable [2], connects the module to the Audio-Video output of the camcorder and derives the video signal used to capture the still images. The images are captured by pressing the shutter button [4].

Elements not specifically shown or described herein are understood to be selectable from those known in the art. The frame grabber circuitry is derived from standard electronics and therefore is not specifically described here. The same applies to the storage of images which can be realized with RAM, various magnetic storage media such as magnetic cards, disks, removable RAM etc. The photo adapter module can be connected to a PC via serial or parallel ports, via infrared links or other data transfer links.

It should be appreciated that the embodiments have been illustrated for the purpose of illustration only, without any intention of limiting the scope of the present invention. Rather, it is the intention that the present invention be limited only by the appended claims.

Preferred Embodiment -- Operation

The video signal used as source of images for the freeze-frame adapter is derived from the camcorder via the Audio-Video output, a standard feature of most camcorders.

The viewfinder of the camcorder also operates as the viewfinder in snap-shot mode. The image is captured by pressing the shutter button [4] Images can be acquired while the camcorder is filming. Both motion and still images of the same scene can be acquired. The camcorder and the freeze frame adaptor can be operated with a single hand. The shutter button [4] can be reached with the thumb of the same hand used to operate the video camera.

Conclusions, Ramifications, and Scope

Accordingly, it can be seen that the photo adapter module represents an inexpensive and practical way to acquire still images from camcorders. Although the description above contains many specificities, these should not be construed as limiting the scope of the invention but as merely providing illustrations of some of the presently preferred embodiments of this invention. Various other embodiments and ramifications are possible within its scope. For example, an embodiment including separate or removable batteries is possible. Thus the scope of the invention should be determined by the appended claims and their legal equivalents, rather than by the examples given.

Brief Description of the Drawings

Fig. 1 is a perspective view of the invention. It illustrates how the freeze frame module [1] is connected to the camcorder at the battery attachment. The short cable [2] is the only other connection to the camcorder via the Audio-Video socket [3]. In the described embodiment the adapter module contains the camcorder battery.

Fig. 2 is a schematic perspective of the invention showing the adapter module [1] in place. Images are acquired by pressing the shutter button [4].

Claims

What is claimed is:

1. An add-on module for video cameras or camcorders to allow freeze-frame operation.
2. The add-on module of claim 1 wherein the battery is removable.
3. The add-on module of claim 1 wherein the camcorder or video camera own battery can be utilized in an appropriate receptacle built in the module.
4. The add-on module of claim 1 with play back capability either via an external video monitor or a display built in the freeze-frame module.
5. The add-on module of claim 4 wherein the display is always active and is used as an alternate viewfinder of the camcorder.
6. The add-on module of claim 5. without freeze-frame capability, used only as an alternate view-finder.

AMENDED CLAIMS

[received by the International Bureau on 13 November 1998 (13.11.98);
original claims 1, 5 and 6 amended; new claims 7 and 8 added;
remaining claims unchanged (1 page)]

What is claimed is:

1. A universal add-on module for video cameras or camcorders to allow freeze-frame operation without requiring any modifications of the camcorder or video camera.
2. The add-on module of claim 1 wherein the battery is removable.
3. The add-on module of claim 1 wherein the camcorder or video camera own battery can be utilized in an appropriate receptacle built in the module.
4. The add-on module of claim 1 with play back capability either via an external video monitor or a display built in the digital video module.
5. An add-on module for video cameras or camcorders allowing on line storage of video signal in digital format.
6. The add-on module of claim 5 requiring no modifications of the camcorder or video camera.
7. The add-on module of claim 5 with on line signal compression capability, such as MPEG encoding.
8. The add-on module of claim 5 with off line compression capability of the video signal stored on the camcorder's tape.

Fig.1

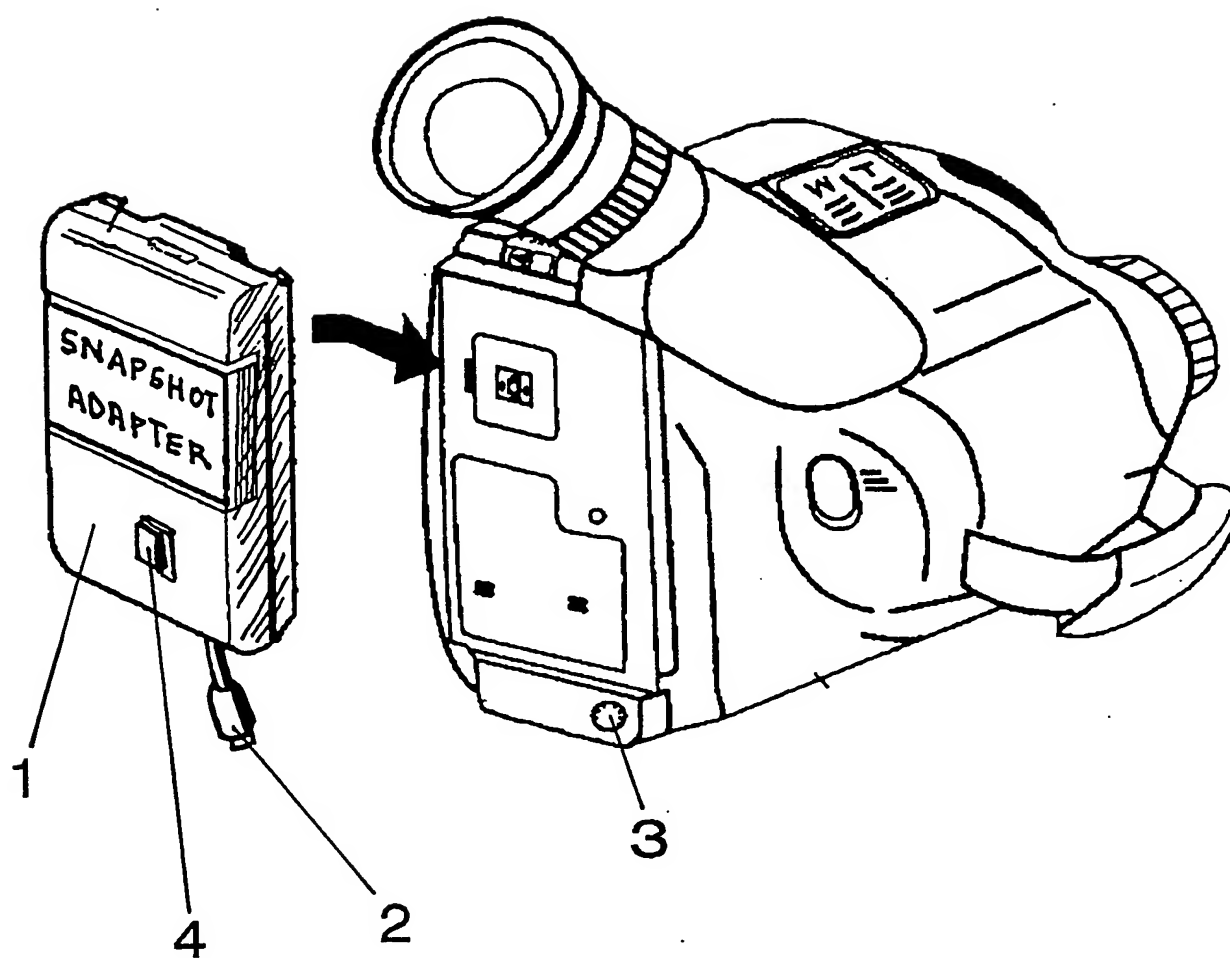
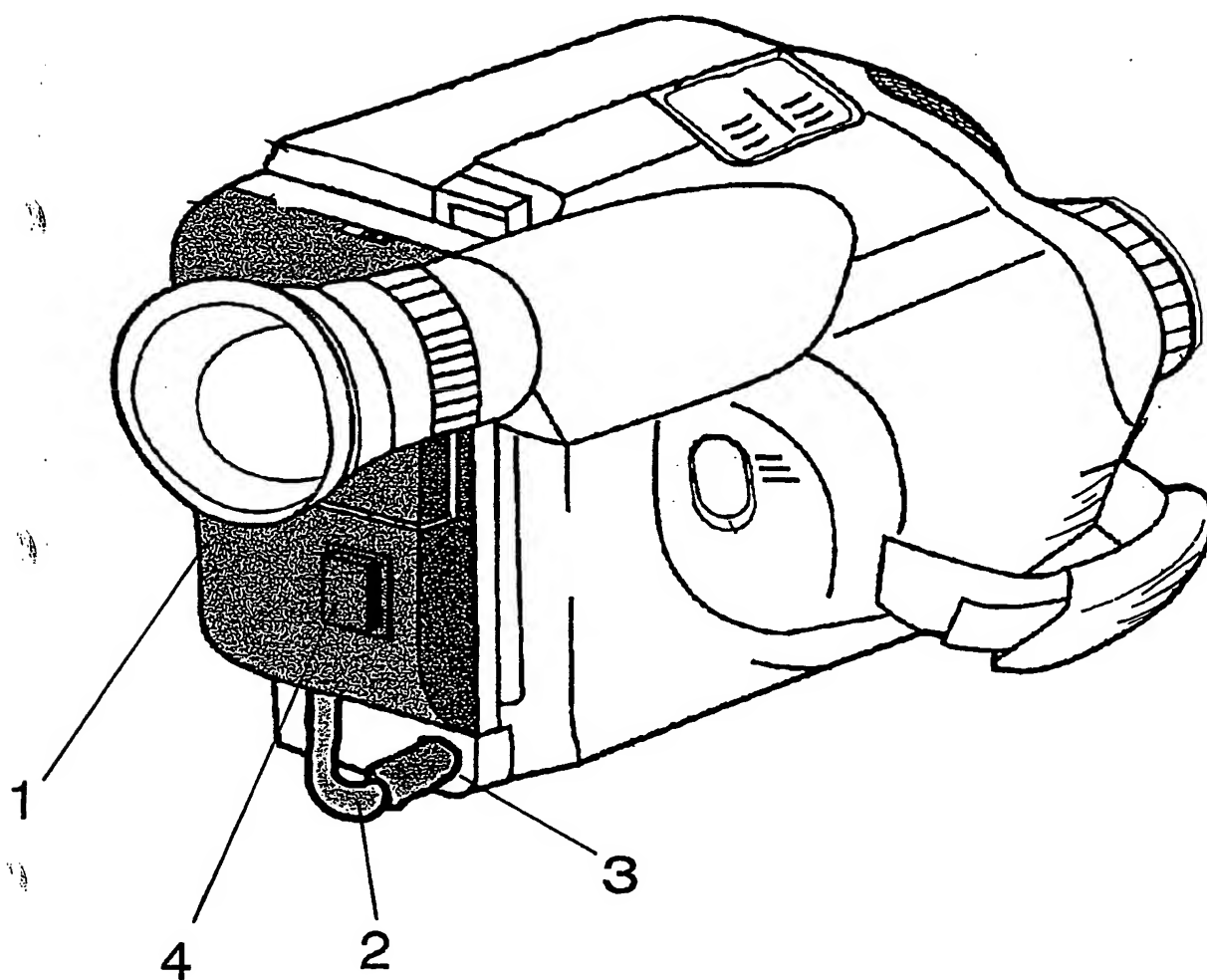


Fig.2



INTERNATIONAL SEARCH REPORT

Intern. Application No
PCT/IB 98/00660

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 H04N5/225

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 H04N G11B

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PATENT ABSTRACTS OF JAPAN vol. 013, no. 584 (E-866), 22 December 1989 & JP 01 245767 A (NEC HOME ELECTRON LTD), 29 September 1989 see abstract	1
A	--- PATENT ABSTRACTS OF JAPAN vol. 016, no. 526 (E-1286), 28 October 1992 & JP 04 196687 A (OLYMPUS OPTICAL CO LTD), 16 July 1992 see abstract --- -/--	1



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

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Date of the actual completion of the international search

28 August 1998

Date of mailing of the international search report

23/09/1998

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INTERNATIONAL SEARCH REPORT

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Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>PATENT ABSTRACTS OF JAPAN vol. 013, no. 066 (P-828), 15 February 1989 & JP 63 253929 A (ASAHI DENKI SEISAKUSHO:KK), 20 October 1988 see abstract</p>	1
A	<p>US 5 173 779 A (LEE JONG P) 22 December 1992 see column 3, line 48 - column 5, line 59 see figure 1</p>	4
A	<p>PATENT ABSTRACTS OF JAPAN vol. 017, no. 145 (E-1337), 24 March 1993 & JP 04 311163 A (SONY CORP), 2 November 1992 see abstract</p>	6

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5173779 A	22-12-1992	NONE	

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